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**AERONEX® GAS PURIFICATION
SYSTEM Z2 SERIES**

*Continuous bulk XCDA® (Extreme Clean Dry Air)
purge gas at a low cost of ownership*



added value; low total cost of ownership

Overview

Advanced Technology in Bulk Gas Purification

The Aeronex® Gas Purification System (AGPS), Z2 series, is the latest continuous service bulk gas purification system from Entegris. The system brings advanced technology to bulk gas purification, providing semiconductor manufacturers with an innovative, efficient and cost-effective solution to purify purge gases used in dry and immersion-based lithography tools.

The Entegris AGPS represents the culmination of 15 years of experience in gas purification and delivery technologies. It delivers XCDA® (Extreme Clean Dry Air) purge gas to today's scanner platforms including immersion lithography tools. XCDA® is proven to be an effective and safer alternative to other purge gases for lithography applications.

The new "Z2" media represents the latest advancement in purification technology from Entegris, providing for outlet purity in the sub part-per-trillion (ppt) levels. The system applies ambient temperature purification, so heating is not required for purification. This means resource conservation and lower energy costs. The AGPS effectively and efficiently removes contaminants such as SO₂, SO_x, NO_x, H₂S, H₂O, CO₂, siloxanes, ammonia, amines, acid gasses, alcohols and non-methane hydrocarbons from CDA (air) gas.

Innovative Design for Improved Total Cost of Ownership

At the heart of the system is an innovative purification process developed by Entegris, which allows for a smaller footprint that consumes less power than comparable high-flow systems, effectively delivering enhanced safety, cost savings, reduced waste and efficiency. Entegris customers benefit from added value in Total Cost of Ownership (TCO) and improved return on investment.

The system employs a novel design using multiple purifier beds which are smaller than those in traditional systems. The beds work in parallel to maintain a continuous flow of pure gas. In each module, one purifier bed is in regeneration while the remaining beds are online. The beds are automatically regenerated in sequence to ensure

optimal removal of targeted molecular contaminants. All functions are completely automated, requiring minimal user interface and providing maximum reliability.

Purifiers are integrated into a single, micro-processor-controlled cabinet with a visual status display and touch screen interface, so operators know at a glance, the level of purified gas available in each of the purifier beds. The system offers improved safety by placing all purifiers in a single location and, because the purifiers are regenerable, environmental impact is nil.

Smaller Footprint, Modular Design Saves Fab Space

The system's modular design is another key facet of the system. The AGPS may be configured to suit a variety of layout requirements, enabling fabs to make optimal use of available space. In addition, the system is easily expanded from 5,000 SLM per module to 20,000 SLM per system total capacity. The AGPS is also designed to effectively accommodate the increased capacity of next generation lithography tools, which are expected to require more than four times the volume of gas used by today's systems. Ethernet support conveniently facilitates seamless integration with existing fab processes.

The Clarilite Certified Solution to Prevent Reticle Haze

The Aeronex® GPS System works as part of the Clarilite Certified Solution to prevent reticle haze. Clarilite is the first comprehensive solution to help semiconductor manufacturers address the quality and cost issues associated with reticle haze in 193 nm lithography. The AGPS delivers XCDA® purge gas to the scanner, the stocker environment and the pods. This provides a continuous cleansing environment for the reticle, preventing the formation of haze by controlling and purifying the environment in and around the reticle between uses. Fabs that implement the Clarilite solution often realize a four to five times increase in meantime between reticle cleanings, providing a dramatic savings in both time and money-enhancing quality and increasing yield.

Applications

- Photolithography
- FOUP cleaning and purging
- Stocker cleaning and purging
- Other applications that require XCDA® purge gas

Features	Benefits
Innovative regeneration process	Significantly reduces energy consumption
Ambient temperature purification	Lower energy costs and resource conservation
Z2 media	Purifies to sub-ppt levels
Self-regenerating purifiers	Environmentally friendly Cost effective
Modularity	Enables easy customization for any fab layout Easy system expansion
Small footprint	Uses less fab space Reduces costs
Completely automatic operation	Saves time Increases reliability
Delivers XCDA® to the Clarilite Certified Solution	Control reticle haze
Ethernet	Enables remote monitoring
Low pressure drop	No changes to inlet pressure are required
Certification	CE and SEMI®
Start-up service	Easy fab integration.
Unique system design	Easy field maintenance and upgrades
Entegris' global infrastructure	Available worldwide with local support

Specifications

Model	AGPS2E	AGPS2F	AGPS2G	AGPS2H
Gases purified	CDA (air)			
Media type	Inorganic			
Contaminants removed	Volatile acids, volatile bases, refractory compounds, condensable organics, moisture			
Outlet purity	<1 ppb H ₂ O, <10 ppt volatile bases, <1 ppt all other contaminants			
Operating pressure range	650 – 1140 kPa (80–150 PSIG)			
Pressure drop	<15 PSI @ 87 PSIG and max rated flow			
Maximum flow rate	5000 SLM	10000 SLM	15000 SLM	20000 SLM
Minimum available flow rate for regeneration	125 SLM	250 SLM	375 SLM	500 SLM
Gas operating temperature	15°C to 40°C (60°F to 104°F)			
Outlet filtration	ISO Class 1 (<10 particles per m ³ at 0.1µm, <2 particles per m ³ at 0.2 µm)			
Leak rating	1 × 10 ⁻⁹ atm cc/sec.			

Note: All specifications subject to change.

Safety Features

Feature	Description
Circuit breaker	Provides additional electrical protection to the system and includes a lock-out/tag-out.
Over-temperature rise condition	Monitored via thermocouple. Heaters sized to prevent runaway conditions. As a secondary precautionary device, a high-temperature hardware interlock is included on all systems.
EMO button	When activated, power is removed from the main enclosure. The front panel and controller remain powered. Process gas flow is shut off.
Remote EMO	Provides input for remote EMO activation. In the event of an EMO shutdown, the system will send an output signal to an external sensing device that alerts the facility of the alarm.
Remote alarm	In the event of a minor alarm in the system not requiring an EMO shutdown, the system will send an output signal to an external sensing device that alerts the facility of the alarm.
Visual alarm	Alarm conditions will result in a visual alarm on the front panel of the electrical enclosure.
Audible alarm	Alarm conditions result in an audible alarm.
Isolated electrical enclosure	Electronics are physically isolated from the main purifier cabinet in an attached electrical enclosure.

Facility Specifications

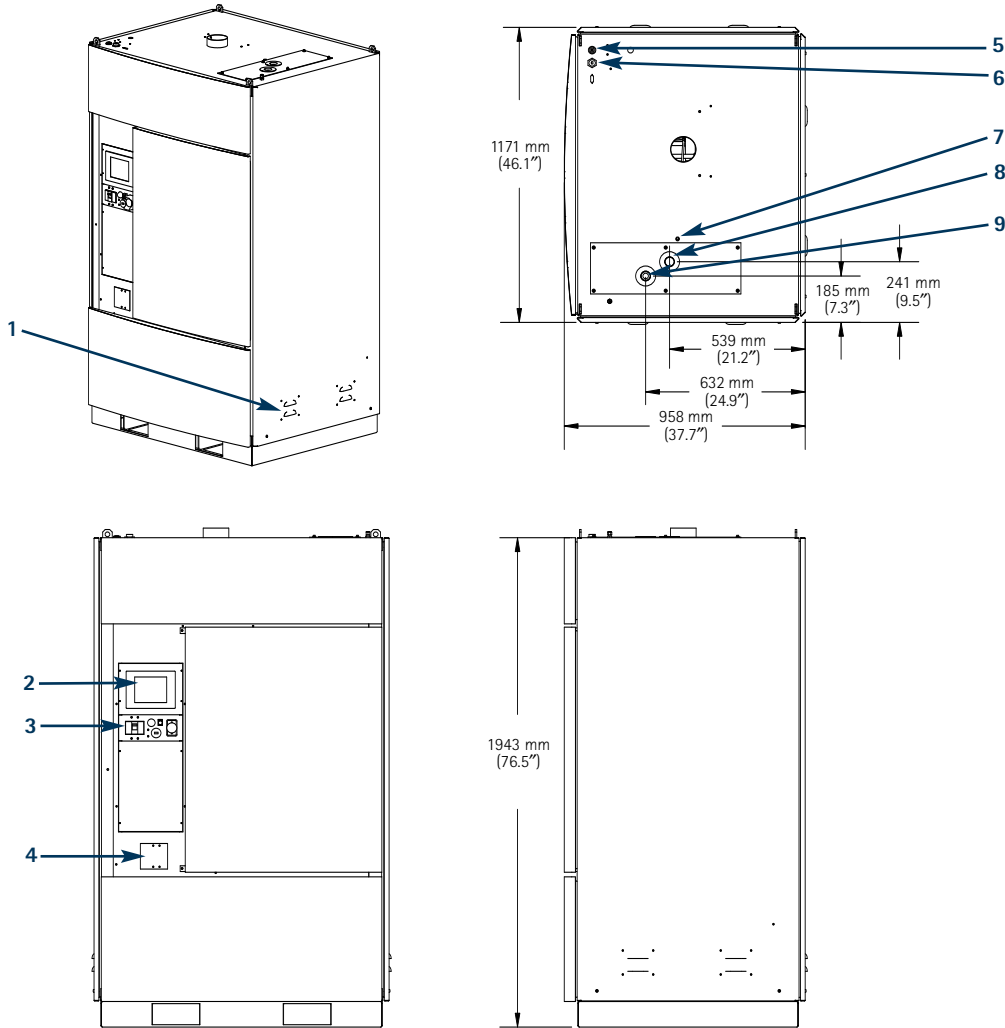
Specifications		AGPS2E	AGPS2F	AGPS2G	AGPS2H
Process gas input	Mechanical connection	1½" tube stub	1½" tube stub	2" tube stub	2" tube stub
Process gas output	Mechanical connection	1½" tube stub	1½" tube stub	2" tube stub	2" tube stub
Ventilation	Mechanical connection	4" duct			
	Exhaust flow	Self-ventilating fan, requires separate 230 VAC single phase, 50 Hz, 115W			
Power requirements	Mechanical connection	3-pin mechanical disconnect			
	Power requirements	200 -240 VAC single phase			
	Power consumption	150W at idle and online; 2000W at regen	300W at idle and online; 4000W at regen	450W at idle and online; 6000W at regen	600W at idle and online; 8000W at regen
Regeneration	Regen duration	24 hours for each purifier bed			
Regen gas output	Mechanical connection	¼" face seal			
	Pressure	<14.5 PSI @ max pressure and max rated flow			
Instrument air	Mechanical connection	¼" compression fitting			
	Gas and pressure	CDA or N ₂ @ 653-791 kPa (80-100 PSIG)			
Physical requirements	Mounting	Floor			
	Recommended maintenance space	3 feet on all sides for minimum MTTR			
	Shipping weight	680 kg (1500 lbs)	1361 kg (3000 lbs)	2041 kg (4500 lbs)	2722 kg (6000 lbs)
	Operating conditions	15°-40°C indoor (60°-104°F indoor)			
	Humidity	10-90% RH noncondensing			

Note: It is the customer's responsibility to ensure that the equipment is installed according to local building code requirements. All specifications subject to change.

Model AGPS2E: Single Module

Specific information on all models is available on request.

Dimensional Information



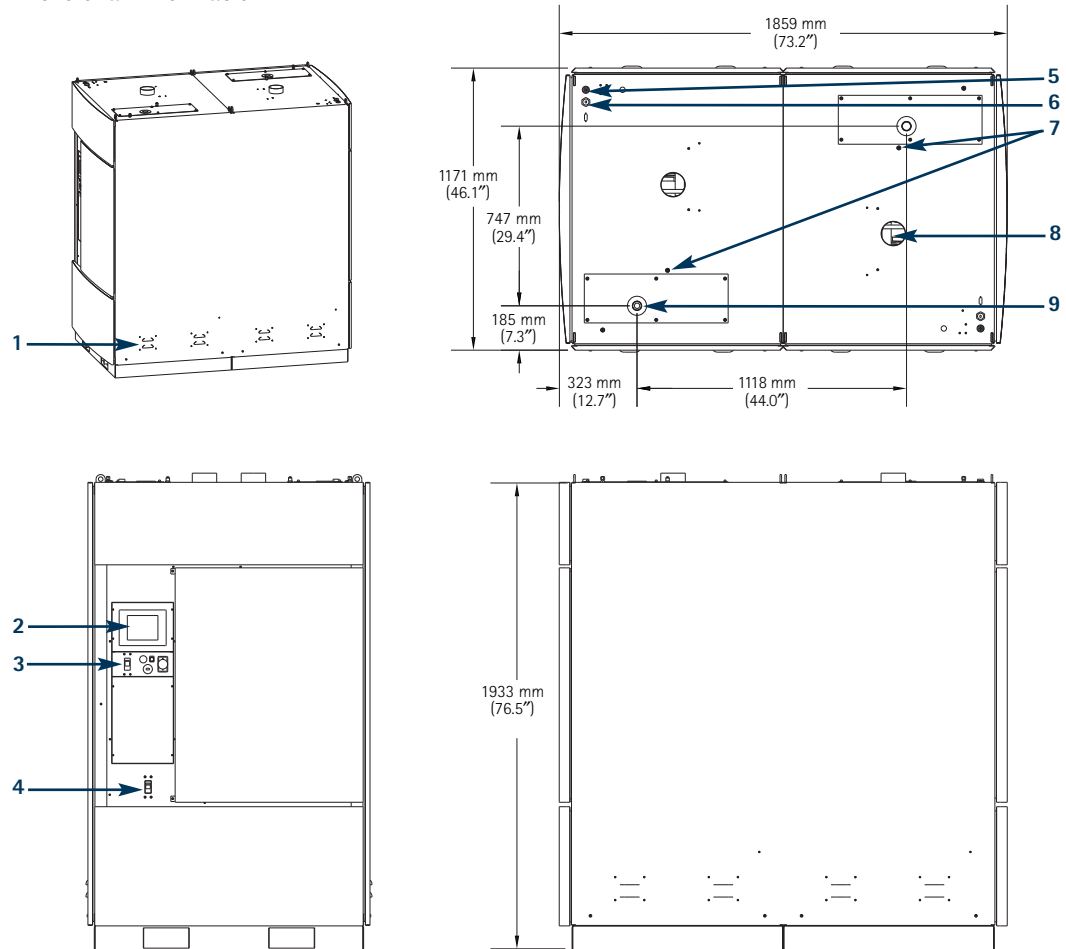
System Components

1	Ventilation louvers	Louvers include integrated filters to maintain interior cleanliness
2	Touch screen	System status and interface
3	Instrument panel	Contains visual alarm, USB interface, start/clear button and EMO button
4	Circuit breaker	Provides additional electrical protection to the system and acts as an ON/OFF switch for the system
5	A/C power input	Power connection
6	Ethernet connection	Network connection for remote monitoring via ethernet
7	Exhaust vent	Allows ventilation
8	Process gas input	Customer-supplied unpurified CDA line
9	Process gas output	Purified XCDA® purge gas line

Model AGPS2F: Back-to-back Layout

Specific information on all models is available on request.

Dimensional Information



System Components

1	Ventilation louvers	Louvers include integrated filters to maintain interior cleanliness
2	Touch screen	System status and interface
3	Instrument panel	Contains visual alarm, USB interface, start/clear button and EMO button
4	Circuit breaker	Provides additional electrical protection to the system and acts as an ON/OFF switch for the system
5	A/C power input	Power connection
6	Ethernet connection	Network connection for remote monitoring via ethernet
7	Process gas input	Customer-supplied unpurified CDA line
8	Exhaust vent	Allows ventilation
9	Process gas output	Purified XCDA® line

Enclosure Information

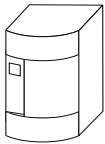
The Aeronex® Z2 series enclosure is designed for indoor applications only. The enclosure has bolt down locations on the bottom surface. Panels are removable on all four sides of the enclosure.

The unique modular assembly of larger systems allows for field expansion of smaller systems. Expansion requires purchase of additional 'slave' modules and on-site welding and rewiring.

Layout Possibilities

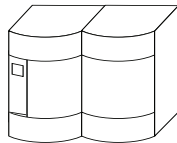
Multiple modules can be arranged in a variety of layouts to allow for maximum utilization of valuable floor space in your facility. Other layout configurations may be available upon request, consult your local sales representative for more information.

AGPS2E (5000 SLM)

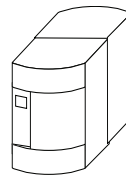


Layout Type: 0
Single Module

AGPS2F (10000 SLM)

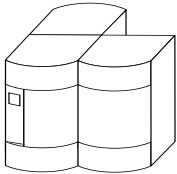


Layout Type: 1
Side-by-side

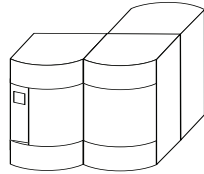


Layout Type: 2
Back-to-back

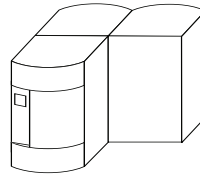
AGPS2G (15000 SLM)



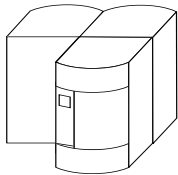
Layout Type: 4
L Shape



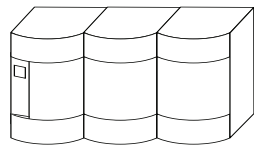
Layout Type: 5
J Shape



Layout Type: 6
P Shape

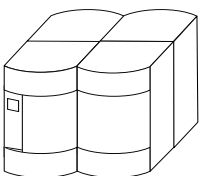


Layout Type: 7
7 Shape



Layout Type: 1
Side-by-side

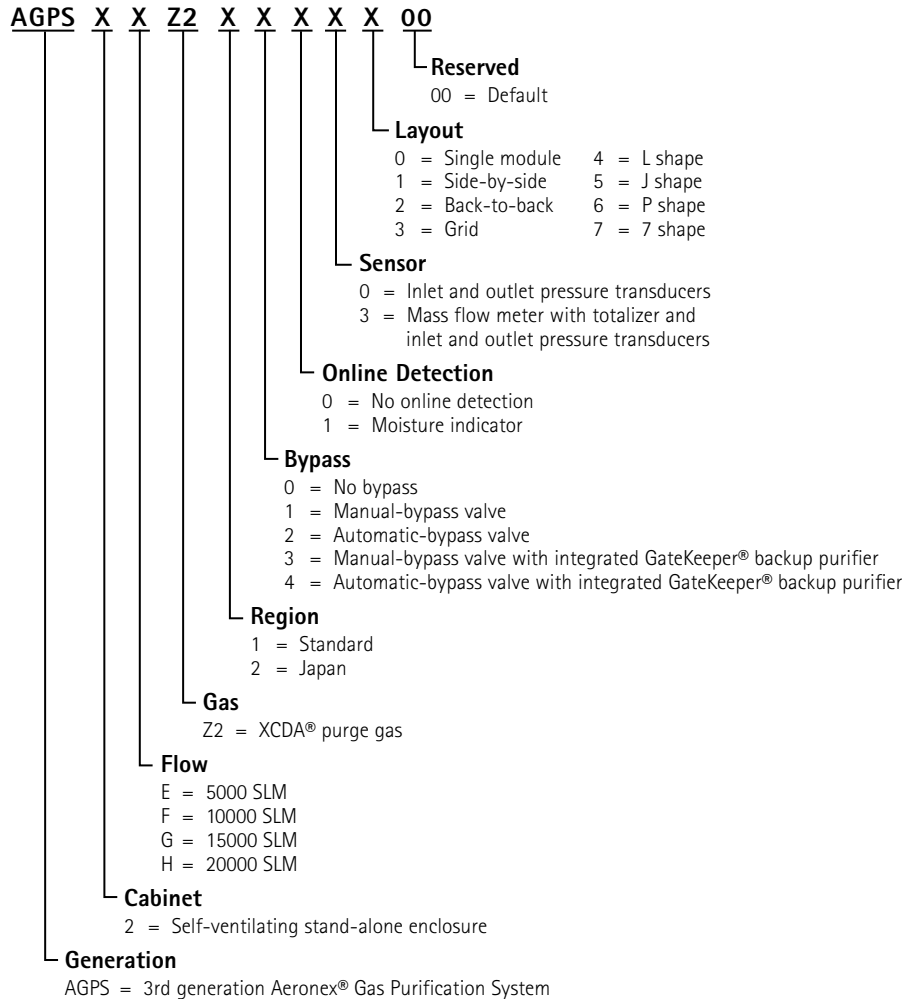
AGPS2H (20000 SLM)



Layout Type: 3
Grid

Ordering Information

Part Number



Note: Not all options are available for all configurations. Consult your local sales representative for more information and assistance to select a part number.

For More Information

Please call your Regional Customer Service Center today to learn what Entegris can do for you. Visit www.entegris.com and select "Regional Customer Service Centers" for the center nearest you.

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